

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	12359	((analyz\$3 or algorithm) with (transaction\$2 or transfer\$3 or deliver\$3)) and (data with (structur\$3 or model)))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/03/04 07:45
L2	3288	(gaussian with model)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/03/04 07:46
L3	102	1 and 2	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/03/04 07:46
L4	34914	((cluster\$3 or group\$3 or aggregat\$3) with analyz\$3)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/03/04 07:47
L5	246	(transaction\$2 with (cluster\$3 or group\$3 or aggregat\$3) with analyz\$3)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/03/04 07:47
L6	5	3 and 5	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/03/04 07:47
L7	0	6 and @ad<"20001218"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/03/04 07:52
L8	30	3 and @ad<"20001218"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/03/04 07:59

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L17	4	(retail\$ with mining) and 5	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/03/04 07:59
L18	0	17 and @ad<"20001218"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/03/04 08:04
L19	17	(retail\$ with mining) and (707/6). ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/03/04 08:03
L20	3	19 and 2	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/03/04 08:00
L21	0	20 and @ad<"20001218"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/03/04 08:00
L22	11	(retail\$ with mining) and (707/3). ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/03/04 08:03
L23	7	(retail\$ with mining) and (707/100). ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/03/04 08:04
L24	14	(retail\$ with mining) and (705/26). ccls.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/03/04 08:04

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L9	2	3 and @ad<"20001218" and mining	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/03/04 07:48
L10	0	5 and 2 and @ad<"20001218"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/03/04 07:58
L11	24	4 and 2 and @ad<"20001218"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/03/04 07:53
L12	5	11 and mining	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/03/04 07:57
L13	0	(retail\$ with enterprise) and 5 and mining	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/03/04 07:58
L14	8	(retail\$ with transaction) and 5 and mining	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/03/04 07:58
L15	0	14 and @ad<"20001218"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/03/04 08:00
L16	1	(retail\$ with transaction) and 2 and mining	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/03/04 07:59

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L25	0	23 and 2 and @ad<"20001218"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/03/04 08:05
L26	0	24 and 2 and @ad<"20001218"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/03/04 08:05
L27	0	22 and 2 and @ad<"20001218"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/03/04 08:05
L28	0	22 and 5 and @ad<"20001218"	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/03/04 08:06
L29	2	("20020078064").PN.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/03/04 08:06

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is found, each **cluster** is treated as an alphabet and each trajectory is ... semi-supervised learning approach based on **Gaussian Mixture Model** (GMM) VIII. ...
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variety of domains, including **retail transactions**, DNA sequences, ... can be considered a **Gaussian Mixture Model** (GMM). A new ...
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data model is used in **inter-transaction** association rule mining (Agrawal and ... window and **cluster** the resulting set of time series as described above. ...
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our implementation, consisting of a parallel computing **cluster**, ... **Gaussian Mixture Model** (GMM) using Multiple Discriminant Analysis (MDA) coefficients, ...
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4.1 Clustering and **Cluster** Validation for Categorical Data numerical clustering, the **Gaussian mixture model** does not work well for irregularly shaped ...

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1 [Poster papers: CLOPE: a fast and effective clustering algorithm for transactional data](#)

Yiling Yang, Xudong Guan, Jinyuan You

 July 2002 **Proceedings of the eighth ACM SIGKDD international conference on Knowledge discovery and data mining KDD '02**
Publisher: ACM Press

Full text available: [pdf\(621.59 KB\)](#) **Additional Information:** [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper studies the problem of categorical data clustering, especially for transactional data characterized by high dimensionality and large volume. Starting from a heuristic method of increasing the height-to-width ratio of the cluster histogram, we develop a novel algorithm -- CLOPE, which is very fast and scalable, while being quite effective. We demonstrate the performance of our algorithm on two real world datasets, and compare CLOPE with the state-of-art algorithms.

Keywords: categorical data, clustering, data mining, scalability

2 [Efficient similarity search for market basket data](#)

Alexandros Nanopoulos, Yannis Manolopoulos

 October 2002 **The VLDB Journal — The International Journal on Very Large Data Bases**, Volume 11 Issue 2

Publisher: Springer-Verlag New York, Inc.

Full text available: [pdf\(212.88 KB\)](#) **Additional Information:** [full citation](#), [abstract](#), [citations](#), [index terms](#)

Several organizations have developed very large market basket databases for the maintenance of customer transactions. New applications, e.g., Web recommendation systems, present the requirement for processing similarity queries in market basket databases. In this paper, we propose a novel scheme for similarity search queries in basket data. We develop a new representation method, which, in contrast to existing approaches, is proven to provide correct results. New algorithms are proposed for the ...

Keywords: Data mining, Market basket data, Nearest-neighbor, Similarity search

3 [Clustering: Efficiently clustering transactional data with weighted coverage density](#)

Hua Yan, Keke Chen, Ling Liu

 November 2006 **Proceedings of the 15th ACM international conference on Information**

and knowledge management CIKM '06**Publisher:** ACM PressFull text available: [pdf\(367.51 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

It is widely recognized that developing efficient and fully automated algorithms for clustering large transactional datasets is a challenging problem. In this paper, we propose a fast, memory-efficient, and scalable clustering algorithm for analyzing transactional data. Our approach has three unique features. First, we use the concept of Weighted Coverage Density as a categorical similarity measure for efficient clustering of transactional datasets. The concept of weighted coverage density is in ...

Keywords: AMI, LISR, SCALE, weighted coverage density**4 Probabilistic modeling of transaction data with applications to profiling, visualization, and prediction**

Igor V. Cadez, Padhraic Smyth, Heikki Mannila

August 2001 **Proceedings of the seventh ACM SIGKDD international conference on Knowledge discovery and data mining KDD '01****Publisher:** ACM PressFull text available: [pdf\(872.07 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Transaction data is ubiquitous in data mining applications. Examples include market basket data in retail commerce, telephone call records in telecommunications, and Web logs of individual page-requests at Web sites. Profiling consists of using historical transaction data on individuals to construct a model of each individual's behavior. Simple profiling techniques such as histograms do not generalize well from sparse transaction data. In this paper we investigate the application of probabilisti ...

Keywords: EM algorithm, mixture models, profiles, transaction data**5 Industry track session: Feature-based recommendation system**

Eui-Hong (Sam) Han, George Karypis

October 2005 **Proceedings of the 14th ACM international conference on Information and knowledge management CIKM '05****Publisher:** ACM PressFull text available: [pdf\(105.58 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The explosive growth of the world-wide-web and the emergence of e-commerce has led to the development of *recommender systems*--a personalized information filtering technology used to identify a set of N items that will be of interest to a certain user. User-based and model-based collaborative filtering are the most successful technology for building recommender systems to date and is extensively used in many commercial recommender systems. The basic assumption in these algorithms is ...

Keywords: collaborative filtering, e-commerce, product features, recommender systems, web retailer**6 Item-based top- N recommendation algorithms**

Mukund Deshpande, George Karypis

January 2004 **ACM Transactions on Information Systems (TOIS)**, Volume 22 Issue 1**Publisher:** ACM PressFull text available: [pdf\(240.61 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

The explosive growth of the world-wide-web and the emergence of e-commerce has led to the development of *recommender systems*---a personalized information filtering technology used to identify a set of items that will be of interest to a certain user. User-based collaborative filtering is the most successful technology for building recommender systems to date and is extensively used in many commercial recommender systems. Unfortunately, the computational complexity of these methods grows ! ...

Keywords: e-commerce, predicting user behavior, world wide web

7 [SQLEM: fast clustering in SQL using the EM algorithm](#)

 Carlos Ordonez, Paul Cereghini

May 2000 **ACM SIGMOD Record , Proceedings of the 2000 ACM SIGMOD international conference on Management of data SIGMOD '00**, Volume 29 Issue 2

Publisher: ACM Press

Full text available:  [pdf\(1.07 MB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Clustering is one of the most important tasks performed in Data Mining applications. This paper presents an efficient SQL implementation of the EM algorithm to perform clustering in very large databases. Our version can effectively handle high dimensional data, a high number of clusters and more importantly, a very large number of data records. We present three strategies to implement EM in SQL: horizontal, vertical and a hybrid one. We expect this work to be useful for data mining programmer ...

8 [Industry/government track papers: Predicting customer shopping lists from point-of-sale purchase data](#)

 Chad Cumby, Andrew Fano, Rayid Ghani, Marko Krema

August 2004 **Proceedings of the tenth ACM SIGKDD international conference on Knowledge discovery and data mining KDD '04**

Publisher: ACM Press

Full text available:  [pdf\(286.61 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper describes a prototype that predicts the shopping lists for customers in a retail store. The shopping list prediction is one aspect of a larger system we have developed for retailers to provide individual and personalized interactions with customers as they navigate through the retail store. Instead of using traditional personalization approaches, such as clustering or segmentation, we learn separate classifiers for each customer from historical transactional data. This allows us to ma ...

Keywords: POS data, applications, classification, machine learning

9 [Probabilistic query models for transaction data](#)

 Dmitry Pavlov, Padhraic Smyth

August 2001 **Proceedings of the seventh ACM SIGKDD international conference on Knowledge discovery and data mining KDD '01**

Publisher: ACM Press

Full text available:  [pdf\(958.33 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We investigate the application of Bayesian networks, Markov random fields, and mixture models to the problem of query answering for transaction data sets. We formulate two versions of the querying problem: the query selectivity estimation (i.e., finding exact counts for tuples in a data set) and the query generalization problem (i.e., computing the probability that a tuple will occur in new data). We show that frequent itemsets are useful

for reducing the original data to a compressed representa ...

10 Evolving data mining into solutions for insights: Business applications of data mining 

 Chidanand Apte, Bing Liu, Edwin P. D. Pednault, Padhraic Smyth
August 2002 **Communications of the ACM**, Volume 45 Issue 8

Publisher: ACM Press

Full text available:  [pdf\(105.88 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)
 [html\(27.21 KB\)](#)

They help identify and predict individual, as well as aggregate, behavior, as illustrated by four application domains: direct mail, retail, automobile insurance, and health care.

11 A localized algorithm for parallel association mining 

 Mohammed Javeed Zaki, Srinivasan Parthasarathy, Wei Li
June 1997 **Proceedings of the ninth annual ACM symposium on Parallel algorithms and architectures SPAA '97**

Publisher: ACM Press

Full text available:  [pdf\(1.56 MB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

12 Cluster ensembles --- a knowledge reuse framework for combining multiple partitions 

Alexander Strehl, Joydeep Ghosh
March 2003 **The Journal of Machine Learning Research**, Volume 3

Publisher: MIT Press

Full text available:  [pdf\(842.50 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper introduces the problem of combining multiple partitionings of a set of objects into a single consolidated clustering *without* accessing the features or algorithms that determined these partitionings. We first identify several application scenarios for the resultant 'knowledge reuse' framework that we call *cluster ensembles*. The cluster ensemble problem is then formalized as a combinatorial optimization problem in terms of shared mutual information. In addition to a direct ...

Keywords: cluster analysis, clustering, consensus functions, ensemble, knowledge reuse, multi-learner systems, mutual information, partitioning, unsupervised learning

13 Evolving data mining into solutions for insights: Data-driven evolution of data mining algorithms 

 Padhraic Smyth, Daryl Pregibon, Christos Faloutsos
August 2002 **Communications of the ACM**, Volume 45 Issue 8

Publisher: ACM Press

Full text available:  [pdf\(106.77 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)
 [html\(27.95 KB\)](#)

Fundamentally, these algorithms are driven by the nature of the data being analyzed, in both scientific and commercial applications.

14 Research track papers: Efficient closed pattern mining in the presence of tough block constraints 

 Krishna Gade, Jianyong Wang, George Karypis
August 2004 **Proceedings of the tenth ACM SIGKDD international conference on Knowledge discovery and data mining KDD '04**

Publisher: ACM Press

Full text available: [pdf\(288.81 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Various constrained frequent pattern mining problem formulations and associated algorithms have been developed that enable the user to specify various itemset-based constraints that better capture the underlying application requirements and characteristics. In this paper we introduce a new class of *block* constraints that determine the significance of an itemset pattern by considering the dense block that is formed by the pattern's items and its associated set of transactions. Block constr ...

Keywords: block constraint, closed pattern, tough constraint

15 Data Mining with optimized two-dimensional association rules 

 Takeshi Fukuda, Yasuhiko Morimoto, Shimichi Morishita, Takeshi Tokuyama
June 2001 **ACM Transactions on Database Systems (TODS)**, Volume 26 Issue 2

Publisher: ACM Press

Full text available: [pdf\(947.41 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We discuss data mining based on association rules for two numeric attributes and one Boolean attribute. For example, in a database of bank customers, Age and Balance are two numeric attributes, and CardLoan is a Boolean attribute. Taking the pair (Age, Balance) as a point in two-dimensional space, we consider an association rule of the form Age, Balance $\in P \Rightarrow$

Keywords: association rules, convex hull searching, data mining, image segmentation, matrix searching

16 Research track: Inverted matrix: efficient discovery of frequent items in large datasets 

 in the context of interactive mining

Mohammad El-Hajj, Osmar R. Zaïane
August 2003 **Proceedings of the ninth ACM SIGKDD international conference on Knowledge discovery and data mining KDD '03**

Publisher: ACM Press

Full text available: [pdf\(198.31 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Existing association rule mining algorithms suffer from many problems when mining massive transactional datasets. One major problem is the high memory dependency: either the gigantic data structure built is assumed to fit in main memory, or the recursive mining process is too voracious in memory resources. Another major impediment is the repetitive and interactive nature of any knowledge discovery process. To tune parameters, many runs of the same algorithms are necessary leading to the building ...

Keywords: COFI-tree, association rules, frequent patterns mining, inverted matrix

17 Poster papers: Distributed data mining in a chain store database of short transactions 

 Cheng-Ru Lin, Chang-Hung Lee, Ming-Syan Chen, Philip S. Yu
July 2002 **Proceedings of the eighth ACM SIGKDD international conference on Knowledge discovery and data mining KDD '02**

Publisher: ACM Press

Full text available: [pdf\(635.33 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

In this paper, we broaden the horizon of traditional rule mining by introducing a new framework of causality rule mining in a distributed chain store database. Specifically, the

causality rule explored in this paper consists of a sequence of triggering events and a set of consequential events, and is designed with the capability of mining non-sequential, inter-transaction information. Hence, the causality rule mining provides a very general framework for rule derivation. Note, however, that the ...

18 Contributed articles on online, interactive, and anytime data mining: Mining data streams under block evolution

 Venkatesh Ganti, Johannes Gehrke, Raghu Ramakrishnan
January 2002 **ACM SIGKDD Explorations Newsletter**, Volume 3 Issue 2

Publisher: ACM Press

Full text available: [pdf\(1.10 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)

In this paper we survey recent work on incremental data mining model maintenance and change detection under *block evolution*. In block evolution, a dataset is updated periodically through insertions and deletions of *blocks* of records at a time. We describe two techniques: (1) We describe a generic algorithm for model maintenance that takes any traditional incremental data mining model maintenance algorithm and transforms it into an algorithm that allows restrictions on a temporal su ...

19 Implementing leap traversals of the itemset lattice

 Mohammad El-Hajj, Osmar R. Zaïane
August 2005 **Proceedings of the 1st international workshop on open source data mining: frequent pattern mining implementations OSDM '05**

Publisher: ACM Press

Full text available: [pdf\(427.15 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#)

The Leap-Traversal approach consists of traversing the item-set lattice by deciding on carefully selected nodes and avoiding systematic enumeration of candidates. We propose two ways to implement this approach. The first one uses a simple header-less frequent pattern tree and the second one partitions the transaction space using COFI-trees. In this paper we discuss how to avoid nodes in the lattice that would not participate in the answer set and hence drastically reduce the number of candidates ...

20 Beyond intratransaction association analysis: mining multidimensional intertransaction association rules

 Hongjun Lu, Ling Feng, Jiawei Han
October 2000 **ACM Transactions on Information Systems (TOIS)**, Volume 18 Issue 4

Publisher: ACM Press

Full text available: [pdf\(1.31 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

In this paper, we extend the scope of mining association rules from traditional single-dimensional intratransaction associations, to multidimensional intertransaction associations. Intratransaction associations are the associations among items with the same transaction, where the notion of the transaction could be the items bought by the same customer, the events happened on the same day, and so on. However, an intertransaction association ...

Keywords: association rules, data mining, intra/intertransaction, multidimensional context

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Relevance scale **21** [Using a starfield visualization for analyzing product performance of online stores](#)  Juhnyoung Lee, Mark PodlaseckOctober 2000 **Proceedings of the 2nd ACM conference on Electronic commerce EC '00****Publisher:** ACM PressFull text available:  [pdf\(363.32 KB\)](#) Additional Information: [full citation](#), [references](#), [index terms](#)**Keywords:** electronic commerce, marketing, merchandising, visualization**22** [Short papers: smart environments and ubiquitous computing: Building intelligent shopping assistants using individual consumer models](#)  Chad Cumby, Andrew Fano, Rayid Ghani, Marko KremaJanuary 2005 **Proceedings of the 10th international conference on Intelligent user interfaces IUI '05****Publisher:** ACM PressFull text available:  [pdf\(103.31 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

This paper describes an Intelligent Shopping Assistant designed for a shopping cart mounted tablet PC that enables individual interactions with customers. We use machine learning algorithms to predict a shopping list for the customer's current trip and present this list on the device. As they navigate through the store, personalized promotions are presented using consumer models derived from loyalty card data for each individual. In order for shopping assistant devices to be effective, we believe ...

Keywords: classification, machine learning, retail applications**23** [Short papers: COFI approach for mining frequent itemsets revisited](#)  Mohammad El-Hajj, Osmar R. ZaïaneJune 2004 **Proceedings of the 9th ACM SIGMOD workshop on Research issues in data mining and knowledge discovery DMKD '04****Publisher:** ACM PressFull text available:  [pdf\(267.02 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#)

The COFI approach for mining frequent itemsets, introduced recently, is an efficient

algorithm that was demonstrated to outperform state-of-the-art algorithms on synthetic data. For instance, COFI is not only one order of magnitude faster and requires significantly less memory than the popular FP-Growth, it is also very effective with extremely large datasets, better than any reported algorithm. However, COFI has a significant drawback when mining dense transactional databases which is the case ...

24 Research track: CLOSET+: searching for the best strategies for mining frequent closed itemsets

 Jianyong Wang, Jiawei Han, Jian Pei
August 2003 **Proceedings of the ninth ACM SIGKDD international conference on Knowledge discovery and data mining KDD '03**

Publisher: ACM Press

Full text available:  [pdf\(492.93 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Mining frequent closed itemsets provides complete and non-redundant results for frequent pattern analysis. Extensive studies have proposed various strategies for efficient frequent closed itemset mining, such as depth-first search vs. breadthfirst search, vertical formats vs. horizontal formats, tree-structure vs. other data structures, top-down vs. bottom-up traversal, pseudo projection vs. physical projection of conditional database, etc. It is the right time to ask "what are the pros and cons ...

Keywords: *association rules, frequent closed itemsets, mining methods and algorithms*

25 Sequence Mining: Sliding-window filtering: an efficient algorithm for incremental mining

 Chang-Hung Lee, Cheng-Ru Lin, Ming-Syan Chen
October 2001 **Proceedings of the tenth international conference on Information and knowledge management CIKM '01**

Publisher: ACM Press

Full text available:  [pdf\(1.59 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We explore in this paper an effective sliding-window filtering (abbreviated as SWF) algorithm for incremental mining of association rules. In essence, by partitioning a transaction database into several partitions, algorithm SWF employs a filtering threshold in each partition to deal with the candidate itemset generation. Under SWF, the cumulative information of mining previous partitions is selectively carried over toward the generation of candidate itemsets for the subsequent partitions. Alg ...

Keywords: *association rules, data mining, incremental mining, time-variant database*

26 Poster papers: A new two-phase sampling based algorithm for discovering association rules

 Bin Chen, Peter Haas, Peter Scheuermann
July 2002 **Proceedings of the eighth ACM SIGKDD international conference on Knowledge discovery and data mining KDD '02**

Publisher: ACM Press

Full text available:  [pdf\(790.74 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper introduces FAST, a novel two-phase sampling-based algorithm for discovering association rules in large databases. In Phase I a large initial sample of transactions is collected and used to quickly and accurately estimate the support of each individual item in the database. In Phase II these estimated supports are used to either trim "outlier"

transactions or select "representative" transactions from the initial sample, thereby forming a small final sample that more accurately reflects ...

27 [Integrating association rule mining with relational database systems: alternatives and implications](#) 

Sunita Sarawagi, Shibly Thomas, Rakesh Agrawal

June 1998 **ACM SIGMOD Record, Proceedings of the 1998 ACM SIGMOD international conference on Management of data SIGMOD '98**, Volume 27 Issue 2

Publisher: ACM Press

Full text available:  [pdf\(2.03 MB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Data mining on large data warehouses is becoming increasingly important. In support of this trend, we consider a spectrum of architectural alternatives for coupling mining with database systems. These alternatives include: loose-coupling through a SQL cursor interface; encapsulation of a mining algorithm in a stored procedure; caching the data to a file system on-the-fly and mining; tight-coupling using primarily user-defined functions; and SQL implementations for processing in the DBMS. We ...

28 [Striping in disk array RM2 enabling the tolerance of double disk failures](#) 

Chan-Ik Park, Tae-Young Choe

November 1996 **Proceedings of the 1996 ACM/IEEE conference on Supercomputing (CDROM) Supercomputing '96**

Publisher: IEEE Computer Society

Full text available:  [pdf\(188.13 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

There is a growing demand in high reliability beyond what current RAID can provide and there are various levels of user demand for data reliability. An efficient data placement scheme called RM2 has been proposed in \cite{Park95}, which makes a disk array system tolerable against double disk failures. In this paper, we consider how to choose an optimal striping unit for RM2 particularly when no workload information is available except read/write ratio. A disk array simulator for RM2 has bee ...

Keywords: data placement, disk array, performance, reliability, striping

29 [Parallel data mining for association rules on shared-memory multi-processors](#) 

M. J. Zaki, M. Ogihara, S. Parthasarathy, W. Li

November 1996 **Proceedings of the 1996 ACM/IEEE conference on Supercomputing (CDROM) Supercomputing '96**

Publisher: IEEE Computer Society

Full text available:  [pdf\(137.42 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Data mining is an emerging research area, whose goal is to extract significant patterns or interesting rules from large databases. High-level inference from large volumes of routine business data can provide valuable information to businesses, such as customer buying patterns, shelving criterion in supermarkets and stock trends. Many algorithms have been proposed for data mining of association rules. However, research so far has mainly focused on sequential algorithms. In this paper we pres ...

Keywords: Data Mining, Association Rules, Load Balancing, Hash Tree Balancing, Hashing, Shared-Memory Multi-processor

30 [Finding linking opportunities through relationship-based analysis](#) 

Joonhee Yoo, Michael Bieber

 May 2000 **Proceedings of the eleventh ACM on Hypertext and hypermedia HYPERTEXT '00**

Publisher: ACM Press

Full text available:  [pdf\(106.08 KB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

Keywords: World Wide Web applications, book store, hypermedia analysis, hypermedia design, relationship analysis, relationship attributes, relationship management

31 An architecture to support scalable online personalization on the Web 

Anindya Datta, Kaushik Dutta, Debra VanderMeer, Krithi Ramamritham, Shamkant B. Navathe

August 2001 **The VLDB Journal — The International Journal on Very Large Data Bases**, Volume 10 Issue 1

Publisher: Springer-Verlag New York, Inc.

Full text available:  [pdf\(167.25 KB\)](#) Additional Information: [full citation](#), [abstract](#), [citations](#), [index terms](#)

Online personalization is of great interest to e-companies. Virtually all personalization technologies are based on the idea of storing as much historical customer session data as possible, and then querying the data store as customers navigate through a web site. The holy grail of online personalization is an environment where fine-grained, detailed historical session data can be queried based on current online navigation patterns for use in formulating real-time responses. Unfortunately, as mo ...

Keywords: Behavior-based personalization, Dynamic lookahead profile, Profile caching, Scalable online personalization, Web site and interaction model

32 Mining business databases 

 Ronald J. Brachman, Tom Khabaza, Willi Kloesgen, Gregory Piatetsky-Shapiro, Evangelos Simoudis

November 1996 **Communications of the ACM**, Volume 39 Issue 11

Publisher: ACM Press

Full text available:  [pdf\(310.19 KB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

33 Data mining using two-dimensional optimized association rules: scheme, algorithms, and visualization 

 Takeshi Fukuda, Yasukiko Morimoto, Shinichi Morishita, Takeshi Tokuyama

June 1996 **ACM SIGMOD Record , Proceedings of the 1996 ACM SIGMOD international conference on Management of data SIGMOD '96**, Volume 25 Issue 2

Publisher: ACM Press

Full text available:  [pdf\(1.14 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We discuss data mining based on association rules for two numeric attributes and one Boolean attribute. For example, in a database of bank customers, "Age" and "Balance" are two numeric attributes, and "CardLoan" is a Boolean attribute. Taking the pair (Age, Balance) as a point in two-dimensional space, we consider an association rule of the form ((Age, Balance) ∈ P) ⇒ (CardLoan = Yes), which implies that bank customers whose ages and balances fall in ...

34 Short papers: FP-tax: tree structure based generalized association rule mining 

Iko Pramudiono, Masaru Kitsuregawa

◆ June 2004 **Proceedings of the 9th ACM SIGMOD workshop on Research issues in data mining and knowledge discovery DMKD '04**

Publisher: ACM Press

Full text available:  [pdf\(148.81 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#)

Data mining has been widely recognized as a powerful tool to explore added value from large-scale databases. One of data mining techniques, generalized association rule mining with taxonomy, is potential to discover more useful knowledge than ordinary flat association rule mining by taking application specific information into account. We propose *pattern growth* mining paradigm based FP-tax algorithm, which employs a tree structure to compress the database. Two methods to traverse the tree ...

Keywords: data mining, generalized association rule

35 [Mining optimized association rules for numeric attributes](#)

◆ Takeshi Fukuda, Yasuhiko Morimoto, Shinichi Morishita, Takeshi Tokuyama

◆ June 1996 **Proceedings of the fifteenth ACM SIGACT-SIGMOD-SIGART symposium on Principles of database systems PODS '96**

Publisher: ACM Press

Full text available:  [pdf\(873.60 KB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

36 [Book reviews](#)

◆ September 2001 **intelligence**, Volume 12 Issue 3

Publisher: ACM Press

Full text available:  [pdf\(85.17 KB\)](#)  [html\(36.51 KB\)](#) Additional Information: [full citation](#), [references](#), [index terms](#)

37 [Clustering transactions using large items](#)

◆ Ke Wang, Chu Xu, Bing Liu

◆ November 1999 **Proceedings of the eighth international conference on Information and knowledge management CIKM '99**

Publisher: ACM Press

Full text available:  [pdf\(928.33 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

In traditional data clustering, similarity of a cluster of objects is measured by pairwise similarity of objects in that cluster. We argue that such measures are not appropriate for transactions that are sets of items. We propose the notion of large items, i.e., items contained in some minimum fraction of transactions in a cluster, to measure the similarity of a cluster of transactions. The intuition of our clustering criterion is that there should be many large items within ...

38 [Data streams I: Clustering binary data streams with K-means](#)

◆ Carlos Ordonez

◆ June 2003 **Proceedings of the 8th ACM SIGMOD workshop on Research issues in data mining and knowledge discovery DMKD '03**

Publisher: ACM Press

Full text available:  [pdf\(149.75 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)

Clustering data streams is an interesting Data Mining problem. This article presents three variants of the K-means algorithm to cluster binary data streams. The variants include On-line K-means, Scalable K-means, and Incremental K-means, a proposed variant

introduced that finds higher quality solutions in less time. Higher quality of solutions are obtained with a mean-based initialization and incremental learning. The speedup is achieved through a simplified set of sufficient statistics and oper ...

39 [Book reviews: Data mining: concepts and techniques by Jiawei Han and Micheline Kamber](#)



 Fernando Berzal, Nicofás Matín
June 2002 **ACM SIGMOD Record**, Volume 31 Issue 2

Publisher: ACM Press

Full text available:  [pdf\(308.51 KB\)](#) Additional Information: [full citation](#)

40 [Mining frequent patterns with counting inference](#)



 Yves Bastide, Rafik Taouil, Nicolas Pasquier, Gerd Stumme, Lotfi Lakhal
December 2000 **ACM SIGKDD Explorations Newsletter**, Volume 2 Issue 2

Publisher: ACM Press

Full text available:  [pdf\(757.01 KB\)](#) Additional Information: [full citation](#), [citations](#), [index terms](#)

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